

CLMPTO

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CLAIMS 1 – 44 (CANCELLED)

45. (New) A water level monitoring system for determining an amount of water added to and/or consumed from a filtered water container comprising:

a detection sensor comprising an electrode pair, the electrode pair comprising a first electrode and a second electrode spaced sufficiently apart from each other so that an electrical property associated with the first and second electrodes that changes with changes in a water level in said filtered water container can be detected;

a detection circuit connected to the electrode pair in the detection sensor and capable of generating signals based on the electrical property associated with the electrode pair; and

a control unit connected to the detection circuit and capable of receiving signals from the detection circuit, wherein the control unit determines changes in the water level in said filtered water container from the signals received from the detection circuit and thereby determines said amount of filtered water added to and/or consumed from said filtered water container.

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46. (New) The system of claim 45 wherein the electrical property associated with the first electrode and the second electrode is one or more of:

a resistance across said first electrode and said second electrode, a change in a capacitance between said first electrode and said second electrode, a voltage across said first electrode and said second electrode, and a current across said first electrode and said second electrode.

47. (New) The system of claim 45, further comprising a switch that is in electrical communication with said control unit

wherein, when said switch is in a first state, said control unit determines that said filtered water container is in a nonfunctional state, and

when said switch is in a second state, said control unit determines that said filtered water container is in a functional state, and wherein

said control unit determines changes in water level occurring when said filtered water container is in said functional state, and

said control unit does not determine changes in water level occurring when said filtered water container is in said nonfunctional state.

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48. (New) The system of claim 47 wherein said switch is toggled between said first state and said second state by a user.

49. (New) The system of claim 47 wherein said switch is positioned within said filtered water container so that

said switch is in said first state when a lid of the filtered water container is open, and
said switch is in said second state when said lid is closed.

50. (New) The system of claim 47 wherein

said switch is a bubble level switch that comprises a first bubble sensor electrode and
a second bubble sensor electrode in an enclosure trapping (i) a fluid and (ii) a bubble;
wherein

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said bubble sensor electrode is in said first state when said bubble contacts one of said first bubble sensor electrode and said second bubble sensor electrode; and

said bubble sensor electrode is in said second state when said bubble does not contact said first bubble sensor electrode or said second bubble sensor electrode.

51. (New) The system of claim 45 wherein:

said control unit determines that said filtered water container is in a functional state when a rate of change in a water level in said filtered water tank is below a predetermined rate;

said control unit determines that said filtered water container is in a nonfunctional state when a rate of change in a water level in said filtered water tank is above a predetermined rate;

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said control unit determines changes in water level occurring when said filtered water container is in said functional state, and

said control unit does not determine changes in water level occurring when said filtered water container is in said nonfunctional state.

52. (New) The system of claim 47 wherein the filtered water container is fitted with a hopper that holds unfiltered water and wherein the hopper is fitted at its base with a replaceable filter cartridge so that water is filtered by draining through the filter cartridge into a lower portion of the water filter container; and

wherein said switch is positioned within said filtered water container so that

said switch is in said first state when the hopper is removed from said filtered water container, and

said switch is in said second state when said hopper is fitted within said filtered water container.

53. (New) The system of claim 45 wherein the filtered water container is fitted with a hopper that holds unfiltered water and wherein the hopper is fitted at its base with a replaceable filter cartridge so that water is filtered by draining through the filter cartridge into a lower portion of the water filter container.

54. (New) The system of claim 45, further comprising a display in electrical communication with said control unit, wherein the control unit is capable of causing the display to display information derived from the changes in water level.

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55. (New) The system of claim 45, further comprising a display in electrical communication with said control unit, wherein the control unit is capable of causing the display to display one or more of a water level of said filtered water level container, a status of a water filter that is disposed within said filtered water container, a determination of whether said filtered water container is in a functional state, a determination of whether said filtered water container is in a nonfunctional state, a time elapsed or an amount of filtered water consumed since a last filter cartridge change, a current time, a warning of overfilling, or a reminder to refill.

56. (New) The system of claim 45 wherein

said detection sensor further comprises one or more additional electrode pairs, each electrode pair comprising a first electrode and a second electrode spaced sufficiently apart from each other so that an electrical property associated with the first and second electrodes that changes with changes in the water level can be detected,

said detection circuit further comprises one or more additional circuits corresponding to the one or more additional electrode pairs, wherein each circuit in the detection circuit is

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connected to its corresponding electrode pair in the detection sensor and is capable of generating a signal based on the electrical property of its corresponding electrode pair; and

said control unit is capable of receiving the signals from the one or more circuits in the detection circuit and determines changes in the water level in said filtered water container from the signals received from the one or more circuits in the detection circuit and thereby determines an amount of filtered water consumption.

57. (New) The system of claim 56 wherein the electrical property associated with said first electrode and said second electrode in said one or more additional electrode pairs is one or more of:

a resistance across said first electrode and said second electrode, a capacitance between said first electrode and said second electrode, a voltage across said first electrode and said second electrode, or a current across said first electrode and said second electrode.

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58. (New) The system of claim 56 wherein said control unit determines changes in filtered water level based on the electrical properties associated with at least two electrode pairs.

59. (New) The system of claim 45, wherein the control unit monitors a status of a water filter that is in said filtered water container based on signals received from said detection circuit.

60. (New) A water level monitoring system for determining an amount of water added to and/or consumed from a filtered water container comprising:

a detection sensor extended along a length of the filtered water container, the detection sensor comprising a plurality of electrode pairs, each respective electrode pair in the plurality of electrode pairs comprising a first electrode and a second electrode spaced sufficiently far apart from each other in the respective electrode pair so that an electrical

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property associated with the first and second electrodes that changes with changes in the water level can be detected;

a detection circuit in electrical communication with the plurality of electrode pairs in the detection sensor, the detection circuit capable of generating signals based on the respective electrical properties of the first and second electrodes in the plurality of electrode pairs; and

a control unit in electrical communication with the detection circuit, wherein the control unit determines changes in the water level in said filtered water container from the signals received from the detection circuit and thereby determines the amount of water added to and/or consumed from said filtered water container.

61. (New) The system of claim 60 wherein the electrical property associated with one or more of said first and second electrodes in the plurality of electrode pairs is one or more of:

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a resistance across said first electrode and said second electrode, a capacitance between said first electrode and said second electrode, a voltage across said first electrode and said second electrode, and a current across said first electrode and said second electrode.

62. (New) The system of claim 60 wherein said plurality of electrode pairs comprises between 2 electrode pairs and 10 electrode pairs.

63. (New) The system of claim 60 wherein said plurality of electrode pairs comprises more than 10 electrode pairs.

64. (New) The system of claim 60 further comprising a first lead (a), a second lead (b) and a third lead (c), wherein

said first lead (a) is in electrical communication with said first electrode of one of the electrode pairs in said plurality of electrodes;

said second lead (b) is in electrical communication with said second electrode of the one electrode pair in said plurality of electrodes; and

said third lead (c) and said second lead (b) are in electrical communication across a resistor; and

wherein said control unit

sets said third lead (c) to one of a high or low voltage and said first lead to the other of the high or low voltage, thereby producing a high voltage on second lead (b), and

reverses the voltage states of the first and third leads each time a voltage drop is detected at said second lead (b).

65. (New) The system of claim 64 wherein said control unit switches to a low power consumption idle state when said second lead (b) is in a high voltage state.

66. (New) The system of claim 64 wherein said control unit switches to a high power consumption state when said second lead (b) drops from a high voltage state to a low voltage state.

67. (New) The system of claim 60, further comprising a switch that is in electrical communication with said control unit wherein,

when said switch is in a first state, said control unit determines that said filtered water container is in a nonfunctional state, and

when said switch is in a second state, said control unit determines that said filtered water container is in a functional state, and wherein

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said control unit determines changes in water level occurring when said filtered water container is in said functional state, and

said control unit does not determine changes in water level occurring when said filtered water container is in said nonfunctional state.

68. (New) The system of claim 67 wherein said switch is toggled between said first state and said second state by a user.

69. (New) The system of claim 67 wherein said switch is positioned within said filtered water container so that

said switch is in said first state when a lid of the filtered water container is open, and

said switch is in said second state when said lid is closed.

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70. (New) The system of claim 67 wherein

said switch is a bubble level switch that comprises a first bubble sensor electrode and a second bubble sensor electrode in an enclosure trapping (i) a fluid and (ii) a bubble; wherein

said bubble sensor electrode is in said first state when said bubble contacts one of said first bubble sensor electrode and said second bubble sensor electrode; and

said bubble sensor electrode is in said second state when said bubble does not contact said first bubble sensor electrode or said second bubble sensor electrode.

71. (New) The system of claim 60 wherein:

said control unit determines that said filtered water container is in a functional state when a rate of change in a water level in said filtered water tank is below a predetermined rate;

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said control unit determines that said filtered water container is in a nonfunctional state when a rate of change in a water level in said filtered water tank is above a predetermined rate;

said control unit determines changes in water level occurring when said filtered water container is in said functional state, and

said control unit does not determine changes in water level occurring when said filtered water container is in said nonfunctional state.

72. (New) The system of claim 67 wherein the filtered water container is fitted with a hopper that holds unfiltered water and wherein the hopper is fitted at its base with a replaceable filter cartridge so that water is filtered by draining through the filter cartridge into a lower portion of the water filter container; and

wherein said switch is positioned within said filtered water container so that

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said switch is in said first state when the hopper is removed from said filtered water container, and

said switch is in said second state when the hopper is fitted within said filtered water container.

73. (New) The system of claim 60 wherein the filtered water container is fitted with a hopper that holds unfiltered water and wherein the hopper is fitted at its base with a replaceable filter cartridge so that water is filtered by draining through the filter cartridge into a lower portion of the water filter container.

74. (New) The system of claim 60, further comprising a display in electrical communication with said control unit, wherein the control unit is capable of causing the display to display information derived from changes in the current water level.

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75. (New) The system of claim 60, further comprising a display in electrical communication with said control unit, wherein the control unit is capable of causing the display to display one or more of a water level of said filtered water level container, a status of a water filter that is disposed within said filtered water container, a determination of whether said filtered water container is in a functional state, a determination of whether said filtered water container is in a nonfunctional state, a time elapsed or an amount of filtered water consumed since a last filter cartridge change, a current time, a warning of overfilling, and a reminder to refill.

76. (New) The system of claim 60 further comprising one or more additional detection sensors, each extending along a length of the filtered water container, and wherein each additional detection sensor comprises a plurality of electrode pairs, each electrode pair in the plurality of electrode pairs comprising a first electrode and a second electrode, each in

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electrical communication with said detection circuit.

77. (New) The system of claim 76 wherein the control unit determines changes in the filtered water level based on the electrical properties associated with at least two electrode pairs.

78. (New) The system of claim 60 wherein a single common electrode represents the first electrode in each electrode pair in said plurality of electrode pairs.

79. (New) The system of claim 60 wherein each second electrode in all or a portion of the plurality of electrode pairs has a unique length.

80. (New) The system of claim 60 wherein

a single common electrode represents the first electrode in each electrode pair in said plurality of electrode pairs,

each second electrode in all or a portion of the plurality of electrode pairs has a unique length; and

a length of each second electrode in all or a portion of the plurality of electrode pairs is used by said control unit to determine a water level in the filtered water container.

81. (New) The system of claim 60 wherein a length of all or a portion of the electrode pairs in the plurality of electrode pairs is different, and

a length of each electrode pair in all or a portion of the plurality of electrode pairs is used by said control unit to determine a water level in the filtered water container.

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82. (New) A method of measuring changes in a water level in a filtered water container comprising the steps of:

generating a signal based on an electrical property associated with a first electrode and a second electrode in an electrode pair, said electrical property changing with changes in the water level in said filtered water container; and

determining changes in the water level in said filtered water container from the generated signals.

83. (New) The method of claim 82 further comprising the step of

determining an amount of filtered water consumption from the changes in the water level.

84. (New) The method of claim 82 wherein the electrical property associated with said first electrode and said second electrode is one or more of:

a resistance across said first electrode and said second electrode, a change in a capacitance between said first electrode and said second electrode, a voltage across said first electrode and said second electrode, and a current across said first electrode and said second electrode.

85. (New) The method of claim 82, the method further comprising the step of

determining a status of a water filter in said filtered water container based on the changes in the water level.

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86. (New) The method of claim 82, further comprising the steps of:

setting a third electrode in electrical communication with the second lead across a resistor to one of a high or low voltage and said first lead to the other of the high or low voltage, thereby producing a high voltage on the second lead; and

reversing the voltage states of the first and third lead each time a voltage drop is detected at said second lead.

87. (New) A method of measuring a water level of a filtered water container comprising:

generating signals based on electrical properties of a plurality of electrode pairs, the electrical property of each electrode pair in the plurality of electrode pairs changing with changes in the water level in said filtered water container; and

determining changes in the water level in said filtered water container from the generated signals.

88. (New) The method of claim 87 further comprising the step of:

determining an amount of filtered water consumption from the changes in the water level.

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89. (New) The method of claim 87 wherein the electrical property associated with said first electrode and said second electrode is one or more of:

a resistance across said first electrode and said second electrode, a change in a capacitance between said first electrode and said second electrode, a voltage across said first electrode and said second electrode, and a current across said first electrode and said second electrode.

90. (New) The method of claim 87, the method further comprising the step of:

determining a status of a water filter in said filtered water container based on the changes in the water level.